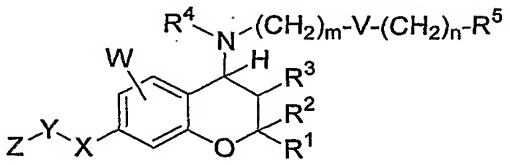
CLAIMS

1. A benzopyran compound of formula (I)



(I)

wherein

X is NR^6 wherein R^6 is hydrogen atom or C_{1-4} alkyl group;

Y is a bond, SO or SO_2;

Z is C_{1-4} alkyl group (wherein the C_{1-4} alkyl group may be arbitrarily substituted with 1 to 5 halogen atoms or pheny group (wherein the phenyl group may be arbitrarily substituted with C_{1-4} alkyl group)) or phenyl group (wherein the phenyl group may be arbitrarily substituted with C_{1-4} alkyl group);

W is hydrogen atom, hydroxy group, C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom), halogen atom, C_{1-4} alkyl group or C_{1-6} alkylsulfonylamino group;

R^1 and R^2 are independently of each other C_{1-3} alkyl group (wherein the C_{1-3} alkyl group may be arbitrarily substituted with hydroxy group, methoxy group, halogen atom or trifluoromethoxy group);

R^3 is hydrogen atom, hydroxy group or methoxy group;

m is an integer of 0 to 4;

n is an integer of 0 to 4;

V is a single bond, CR^7R^8 wherein R^7 is

- C_{1-6} alkyl group (wherein the C_{1-6} alkyl group may be arbitrarily substituted with halogen atom, hydroxy group, C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom), C_{6-14} aryl group or C_{2-9} heteroaryl group (wherein each of the C_{6-14} aryl group or C_{2-9} heteroaryl group may be arbitrarily substituted with 1 to 3 R^{10} wherein R^{10} is halogen atom; hydroxy group; C_{1-6} alkyl group (wherein the C_{1-6} alkyl group may be arbitrarily substituted with halogen atom, hydroxy group or C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom)); C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom); nitro group; cyano group; formyl group; formamide group; sulfonylamino group; sulfonyl group; amino group; C_{1-6} alkylamino group; di-C_{1-6} alkylamino group; C_{1-6} alkylcarbonylamino group; C_{1-6}

alkylsulfonylamino group; aminocarbonyl group; C_{1-6} alkylaminocarbonyl group; di-C_{1-6} alkylaminocarbonyl group; C_{1-6} alkylcarbonyl group; C_{1-6} alkoxycarbonyl group; aminosulfonyl group; C_{1-6} alkylsulfonyl group; carboxy group or C_{6-14} arylcarbonyl group, and when a plurality of R^{10} are present, they may be identical or different from each other), C_{6-14} aryl group or C_{2-9} heteroaryl group (wherein each of the C_{6-14} aryl group or C_{2-9} heteroaryl group may be arbitrarily substituted with 1 to 3 R^{10} wherein R^{10} has the above-mentioned meaning));

- hydroxy group or

- C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom), and R^8 is

- hydrogen atom,

- C_{1-6} alkyl group (wherein the C_{1-6} alkyl group may be arbitrarily substituted with halogen atom, hydroxy group, C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom)),

- C_{6-14} aryl group or C_{2-9} heteroaryl group (wherein each of the C_{6-14} aryl group or C_{2-9} heteroaryl group may be arbitrarily substituted with 1 to 3 R^{11} wherein R^{11} is halogen atom; hydroxy group; C_{1-6} alkyl group (wherein the C_{1-6} alkyl group may be arbitrarily substituted with halogen atom, hydroxy group or C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom)); C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom); nitro group; cyano group; formyl group; formamide group; sulfonylamino group; sulfonyl group; amino group; C_{1-6} alkylamino group; di-C_{1-6} alkylamino group; C_{1-6} alkylcarbonylamino group; C_{1-6} alkylsulfonylamino group; aminocarbonyl group; C_{1-6} alkylaminocarbonyl group; di-C_{1-6} alkylaminocarbonyl group; C_{1-6} alkylcarbonyl group; C_{1-6} alkoxycarbonyl group; aminosulfonyl group; C_{1-6} alkylsulfonyl group; carboxy group or C_{6-14} arylcarbonyl group, and when a plurality of R^{11} are present, they may be identical or different from each other),

- hydroxy group or

- C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom), or R^7 together with R^8 may represent O or S, or

V is NR^9 wherein R^9 is hydrogen or C_{1-6} alkyl group (wherein the C_{1-6} alkyl group may be arbitrarily substituted with halogen atom, C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom), hydroxy group, C_{6-14} aryl group or C_{2-9} heteroaryl group (wherein each of the C_{6-14} aryl group or C_{2-9} heteroaryl group may be arbitrarily substituted with 1 to 3 R^{11} wherein R^{11} has the

above-mentioned meaning)); or O, S, SO or SO_2;
R^4 is hydrogen or C_{1-6} alkyl group (wherein the C_{1-6} alkyl group may be arbitrarily substituted with halogen atom, C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom), or hydroxy group); and
R^5 is
- hydrogen atom,
- C_{1-6} alkyl group (wherein the C_{1-6} alkyl group may be arbitrarily substituted with halogen atom, C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom), amino group, carboxy group or hydroxy group),
- C_{3-8} cycloalkyl group or C_{3-8} cycloalkenyl group (wherein the C_{3-8} cycloalkyl group or C_{3-8} cycloalkenyl group may be arbitrarily substituted with halogen atom, C_{1-6} alkyl group (wherein the C_{1-6} alkyl group may be arbitrarily substituted with halogen atom, C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom), amino group, carboxy group or hydroxy group), C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom), amino, carboxy group or hydroxy group), or
- C_{6-14} aryl group or C_{2-9} heteroaryl group (wherein each of the C_{6-14} aryl group or C_{2-9} heteroaryl group may be arbitrarily substituted with 1 to 3 R^{12} wherein R^{12} is halogen atom; hydroxy group; C_{1-6} alkyl group (wherein the C_{1-6} alkyl group may be arbitrarily substituted with halogen atom, hydroxy group or C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom)); C_{1-6} alkoxy group (wherein the C_{1-6} alkoxy group may be arbitrarily substituted with halogen atom); nitro group; cyano group; formyl group; formamide group; sulfonylamino group; sulfonyl group; amino group; C_{1-6} alkylamino group; di-C_{1-6} alkylamino group; C_{1-6} alkylcarbonylamino group; C_{1-6} alkylsulfonylamino group; aminocarbonyl group; C_{1-6} alkylaminocarbonyl group; di-C_{1-6} alkylaminocarbonyl group; C_{1-6} alkylcarbonyl group; C_{1-6} alkoxycarbonyl group; aminosulfonyl group; C_{1-6} alkylsulfonyl group; carboxy group, C_{6-14} arylcarbonyl group, ureido group, C_{1-6} alkylureilene group, C_{6-14} aryl C_{1-6} alkylamino group, C_{1-6} alkoxycarbonylamino group, C_{6-14} aryloxy group or C_{6-14} arylcarbonylamino group, when a plurality of R^{12} are present, they may be identical or different from each other).

2. The benzopyran compound according to claim 1, wherein both R^1 and R^2 are methyl group, R^3 is hydroxy group, and V is a single bond.

3. The benzopyran compound according to claim 1, wherein both R^1 and R^2 are methyl group, R^3 is hydroxy group, and V is CR^7R^8.

4. The benzopyran compound according to claim 1, wherein both R^1 and R^2 are methyl group, R^3 is hydroxy group, and V is NR^9.

5. The benzopyran compound according to claim 2, wherein R^5 is C_{1-6} alkyl group, C_{3-8} cycloalkyl or C_{6-14} aryl.

6. The benzopyran compound according to claim 3, wherein R^5 is C_{1-6} alkyl group, C_{3-8} cycloalkyl or C_{6-14} aryl.

7. The benzopyran compound according to claim 4, wherein R^5 is C_{1-6} alkyl group, C_{3-8} cycloalkyl or C_{6-14} aryl.

8. The benzopyran compound according to claim 5, wherein W is hydrogen atom, hydroxy group, methoxy group, chlorine atom, bromine atom, methyl group, ethyl group or methylsulfonylamino group.

9. The benzopyran compound according to claim 6, wherein W is hydrogen atom, hydroxy group, methoxy group, chlorine atom, bromine atom, methyl group, ethyl group or methylsulfonylamino group.

10. The benzopyran compound according to claim 8, wherein R^5 is C_{1-6} alkyl group or C_{6-14} aryl, R^6 is hydrogen atom or methyl group, Y is SO_2, and Z is C_{1-4} alkyl group.

11. The benzopyran compound according to claim 8, wherein R^5 is C_{1-6} alkyl group or C_{6-14} aryl, R^6 is hydrogen atom or methyl group, Y is a bond, and Z is C_{1-4} alkyl group.

12. A benzopyran compound which is N-{(*3R**, *4S**)-3-hydroxy-6-methoxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-1-benzopyran-7-yl}-methanesulfonamide.

13. A benzopyran compound which is N-{(*3R*, 4S**)-3,6-dihydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-1-benzopyran-7-yl} methanesulfonamide.

14. A benzopyran compound which is N-{(*3R*, 4S**)-3-hydroxy-6-methoxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-1-benzopyran-7-yl}-N-methylmethanesulfonamide.

15. A benzopyran compound which is N-{(*3R*, 4S**)-4-[(2-cyclohexylethyl)amino]-3-hydroxy-6-methoxy-2,2-dimethyl-3,4-dihydro-2H-1-benzopyran-7-yl} methanesulfonamide.

16. A benzopyran compound which is N-{(*3R*, 4S**)-3-hydroxy-6-methoxy-2,2-dimethyl-4-(pentylamino)-3,4-dihydro-2H-1-benzopyran-7-yl} methanesulfonamide.

17. A benzopyran compound which N-{(*3R*, 4S**)-3-hydroxy-2,2,8-trimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-1-benzopyran-7-yl} methanesulfonamide.

18. A benzopyran compound which is N-{(*3R*, 4S**)-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl} methanesulfonamide maleate.

19. A benzopyran compound which is N-{(*3R*, 4S**)-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl} ethanesulfonamide hydrochloride.

20. A benzopyran compound which is 1,1,1-trifluoro-N-{(*3R*, 4S**)-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl}-methanesulfonamide maleate.

21. A benzopyran compound which is N-{(*3R*, 4S**)-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl}-N-methylmethanesulfonamide hydrochloride.

22. A benzopyran compound which is N-{(*3R*, 4S**)-6-bromo-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl}-

methanesulfonamide.

23. A benzopyran compound which is (*3R*, 4S**)-2,2-dimethyl-7-dimethylamino-4-[(2-phenylethyl)amino]-3-chromanol hydrochloride.

24. A benzopyran compound which is (*3R*, 4S**)-2,2-dimethyl-7-methylamino-4-[(2-phenylethyl)amino]-3-chromanol hydrochloride.

25. A benzopyran compound which is (*3R*, 4S**)-4-{[2-(4-fluorophenyl)ethyl]amino}-2,2-dimethyl-7-dimethylamino-3-chromanol hydrochloride.

26. A benzopyran compound which is (*3R*, 4S**)-6-methoxy-2,2-dimethyl-7-dimethylamino-4-[(2-phenylethyl)amino]-3-chromanol.

27. A benzopyran compound which is (*3R*, 4S**)-6-methoxy-2,2-dimethyl-7-methylamino-4-[(2-phenylethyl)amino]-3-chromanol hydrochloride.

28. A benzopyran compound which is N-{(*3R*, 4S**)-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl}-4-methylbenzenesulfonamide.

29. A benzopyran compound which is N-{(*3R*, 4S**)-3-hydroxy-2,2-dimethyl-6-[(methylsulfonyl)amino]-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl}-methanesulfonamide.

30. A benzopyran compound which is (*3R*, 4S**)-2,2-dimethyl-7-methylethylamino-4-[(2-phenylethyl)amino]-3-chromanol hydrochloride.

31. A benzopyran compound which is N-{(*3R*, 4S**)-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-chromen-7-yl}-N-isopropylmethanesulfonamide hydrochloride.

32. A pharmaceutical characterized by comprising the benzopyran compound according to any one of claims 1 to 31 or pharmaceutically acceptable salt thereof as an active ingredient.

33. A pharmaceutical for treating arrhythmia characterized by comprising the benzopyran compound according to any one of claims 1 to 31 or pharmaceutically acceptable salt thereof as an active ingredient.